World Futures - Plausibility

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April 2021

Goals

- Material welfare (food, shelter, health and security)
- Equality (reducing the grosser disparities between and within nations)
- Economic growth: what is required to meet the needs of people?
 - > Are these sustainable?
 - > Are inequalities functional or inevitable components of the human systems?
 - ➢ How far can human needs be met in futures largely created by a minority of the world's inhabitants?

Humans wish, want and need to *predict the future* Futile cause?

Humans wish, want and need to *predict the futures*

That is very POSSIBLE

Failures of Predicting the Future

Interesting Predictions

- "Inventions have long since reached their limit, and I see no hope for future development"
 - Roman engineer Sextus Julius Frontinus, 1st Century AD
- "Heavier than air flying machines are not possible"
 - Lord Kelvin, President of the Royal Society, 1895
- "There is not the slightest indication that nuclear energy will ever be obtainable. It would mean that the atom would have to be shattered at will."
 - Albert Einstein, 1932
- "I think there is a world market for maybe five computers"
 - Thomas Watson, IBM Chairman, 1943

Interesting Predictions

- "We don't like their sound, and guitar music is on the way out"
 - Decca Recording Co. rejecting The Beatles, 1962
- "640K ought to be enough for anybody"
 - Bill Gates, Co-Founder of Microsoft
- "I predict the Internet will soon go spectacularly supernova and in 1996 catastrophically collapse"
 - Robert Metcalfe, an inventor of Ethernet
- "The fact that conflicts [producing civilian casualties] have been conducted away from the U.S. homeland can be considered one of the more fortunate aspects of the American experience."
 - Quadrennial Defense Review (QDR) for the US Dept. of Defense 2001

WHY SO MANY WRONG PREDICTIONS

BY

BRIGHT MINDS?

The Human Brain

- Human brain neo-cortex has is a hierarchical pattern recognizer
- It acts as innate *built-in* linear predictor
- We favor linear projections including projections of the future



Natural and Human Systems

Ecology, economy, weather, social systems, technology etc. are *complex systems*

Complex systems evolve in *non-linear* ways

Roots of Strategic Surprises

- Human brain favors linear predictions, but natural and human systems are non-linear.
- Strategic surprises come from the gap between our linear projections of the future & the non-linear reality

How do we mitigate uncertainty?

Forecasting

- Projecting one probable future using models and prior system states
- Output: This is what's going to happen!

Forecasts Based on?

- *Theory of Cause and Effect:* Investigated variables are put in a dependent relationship with their relevant determinants and are then predicted based on this knowledge.
- Forecasting on *Time Series Analyses*: statistical tool- trend, typical seasonal but still short-term fluctuations, business cycle and irregular influences.



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Predictability and Uncertainty



Think Creatively

- Think about *The Future*
- The *means* of getting there

Issues:

- People unfamiliar of thinking in this way our faster worlds tend to dictate short term
- reactive positioning to unfolding events

Ask for

(a) the long-term(b) a wide variety of perspectives on any given topic

Foresight – Definition, Goals and methodologies

From single to multiple futures



Courtesy of Prof. Suzanne Stein

Foresight

- Foresight is an enabler for decision-making.
- Foresight stresses eliciting wide participation.
- The term "Foresight" is applied to several activities
- Scenario methods

Foresight

Types of Foresight

- Exploratory: what futures are possible?
- Normative: what future do we want?
- Predictive: what happens if ... ?

Strategic Foresight

- There is no data about the future!
- Most uncertainty comes from human behavior
- Behavior is influenced by multiple complex and interdependent drivers
- Long-term uncertainty can only be reduced by improving preparedness for multiple futures
- Futures built around our critical uncertainties are the most useful to consider
- If insights gained from Strategic Foresight are not linked to today's decisions, it is useless!

Foresight – Definition, Goals and Methodologies

Methods

A- exploratory

- 'What if' questions
- What would have led us to situation?
- B- normative
- Start from a point in the future, and ask "how"
 - What would it have taken to have reached a future where the....?
 - What would have led us to situation?

Scenario Generation Methods

- Present your informed speculations about the future
- *Expert panels* can establish a framework of scenarios on the basis, (literature review and conceptual analysis)
- Clusters the views about the particular future
- Identify the most probable of all the scenarios
- Construct and elaborate on scenarios (in person and online)

Topics to Study

- People Quality of life issues- work, ...
- Public attitudes to: Risk, Expertise, Technology
- Access to technology [and international collaboration]
- Policies (examples: health services and markets)
- Regulatory issues
- Infrastructures and Facilities
- Intellectual Property

Methods of Futures Research



Adapted from Popper, 2008

Methods of Futures Research



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Methods of Futures Research

Backcasting starts with defining a desirable future and then works backwards to identify policies and programs that will connect that specified future to the present.

SWOT stands for Strengths, Weaknesses, Opportunities, and Threats **Pattern analysis** is an approach to neuropsychological test interpretation in which relationships among test scores are used to inform differential diagnosis.

Delphi a basic method of modern foresight.

It represents any iterative systematic effort at collecting expert or group opinion, promoting group interaction and research, and mapping the convergence (or not) of opinion that ensues.

Horizon scanning assessing whether one is adequately prepared for future changes or threats

A *black swan* is an unpredictable event that is beyond what is normally expected of a situation and has potentially severe consequences.

Black swan events are characterized by their extreme rarity, severe impact, and the widespread insistence they were obvious in hindsight.

Brain Storming Essentials

- No criticism or judgement.
- Participants are completely free to express themselves.
- Nothing is unwanted and nothing is wrong
- The quantity and not the quality of ideas is what matters.
- Normally 'results are evaluated after a lapse of time.'

Michael J. Gelb, How to think like Leonardo da Vinci (New York, Delacorte Press, 1998)



Signals: collect tangible specific evidence of change (including weak signals)
Trends: detect patterns and change direction in signals
Drivers: the structure behind the trends (cause & effect)
Uncertainties: unpredictable direction or effect of drivers

Scenarios: important futures imagined with combinations of critical uncertainties

- Scenarios help us imagine plausible futures
- Not what will happen, but what may evolve that will surprise and challenge

Implications Process



Very short training exercise

Practicing Foresight

Practicing Foresight The futures of Pandemics

Examine the Futures of Pandemics

1. Consider 3 futures

- 2. Consider at least 4 drivers for each future
- 3. Identify the most important issues



- 5. Identify specific applications or paths that promote a driver
- 6. What might this driver look like by 2030
- Examine the futures that you considered, are they Desired? Probable? Possible? What can be done about each of them?





As we talked, there are two approaches to identify futures

- A- "exploratory"
- 'What if' questions
- What would have led us to situation?
- B- "normative"
- Start from a point in the future, and ask "how"
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As a group

Present your findings using 12 slides